



User's Manual

Miniature Microphones

Type 4060

Type 4061

Type 4062

Type 4065

Type 4066



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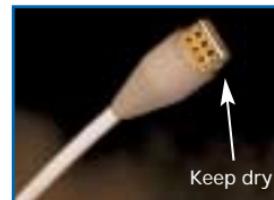
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Cleaning guide

The Miniature Microphones from DPA are designed to be highly resistant to humidity, moisture and sweat. Though highly resistant materials like gold plated stainless steel are used in construction and the microphones feature the highly acknowledged "double-vent-protection-system" to avoid them from being damaged by hostile fluids it is still a good idea to keep the Miniature Microphones away from any kind of unnecessary exposure to water and cleaning fluids.

Attention: Keep the microphone element dry at all times. No attempt to clean the element should be made before reading the cleaning guide carefully. Do not use any kind of cleaning fluid other than distilled water with maximum 10% alcohol on any other part of the Miniature Microphone. Do not use soap. Use of ultra-sonic baths must be avoided. Avoid all kinds of spray or fluids, which contains chemical components to remove static electricity on or close to the microphone as damage can be done to the electret layer.



Attention: Routine cleaning should be avoided. Do not clean the microphone if the microphone is fully functional and does not need cleaning. Clean only the parts of the microphone which need cleaning, i.e. cable or protection grid and read the cleaning guide carefully. Avoid cleaning of the microphone element as long as possible.



Attention: When mounting the Miniature Microphones directly on the skin of a performer, care should be taken to avoid sweat from running directly into the microphone. If the microphone gets filled up with water or sweat it will not be damaged, but possibly turn deaf while the water is captured inside the microphone behind the protection grid. Remove the water by shaking the microphone or drying it with a dry piece of cloth. The microphone should then be fully functional.



Note: If the microphone has been exposed to water or sweat it must be left to dry to recover its original specifications. Drying out the Miniature Microphones between exposures to humidity will also help to extend its lifetime. Leaving the microphones with the power on will speed up the drying process, as the built-in preamplifier will gently heat up the microphone (idle power ~2 mW).

Tip: In order to save battery power on the belt pack transmitters while drying out the microphones it is a good idea to use a P48 Phantom Power Adapter (DAD6001) or one of the Miniature Power Supplies MPS6010, MPS6020, MPS6030 or MPS6040. Please be aware that the microphone will use battery as long as it is connected to the Miniature Power Supply.



Tip: To prevent drop-outs due to sweat in the microphone use of sweat stoppers is recommended. Sweat stoppers are supplied as standard with the Type 4065 and Type 4066 Headband Microphones, and are available as accessories (DUA6010 and DUA6011) for the soft cabled Types 4060, 4061 and 4062.

1 Cleaning

The following simple handling and maintenance procedures can contribute to preserving the microphone's functionality and extend its operational lifetime.

1.1 Cleaning the microphone grid

During use in environments where the microphones are exposed to make-up or dusty materials, the grid can get clogged up. Remove the microphone grid from the microphone element before cleaning it. Clean the grid in a mixture of distilled water with a max. of 10% alcohol. Make sure the grid is dry before remounting it on the microphone element.

Attention: Remove the protection grid from the microphone housing before cleaning it and keep the capsule away from alcohol.



1.2 Cleaning the microphone cable

Residue from tape, glue or make-up on the cable must be removed after use. Leaving these substances on the cable over longer periods of time may etch into the cable jacket and will make the cable more susceptible to breaks. The cable can easily be cleaned using organic oil (e.g. olive oil) or hand warm distilled water with 10% alcohol.

Attention: Do not rub or bend the cable hard since this may stress the inner cores of the cables and cause them to break over time.



1.3 Cleaning the microphone element

The microphone diaphragm is protected inside the microphone element housing and access to the diaphragm is via a perforated grid only. The element is therefore well protected from any dust or other dry particles building up on the diaphragm. Dust on the microphone element should be left alone and no attempt to clean the element should be made. The only recommended method to clean the microphone element is to use a dry cotton bud. Clean (or wipe) the sides of the element facing away from the perforated protection grid only.

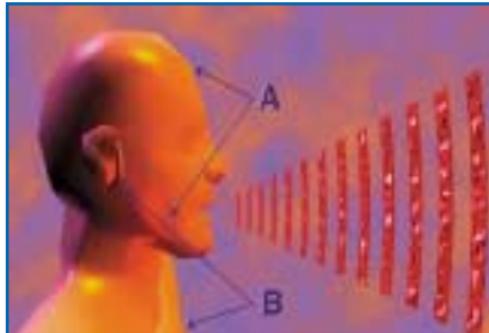


Attention: Cleaning the microphone element by routine must be avoided. If the microphone is fully functional do not clean it. Avoid cleaning of the microphone element as long as possible.

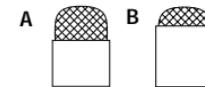
Attention: Do not clean the microphone element with any mechanical object other than a dry cotton bud.

2 Correct use of the Miniature Microphone

It is important to observe the following guidelines concerning the daily use of the microphone.



A Soft boost grid
B High boost grid



2.1 Correct use of microphone grids

The two different protection grids that are supplied with the Miniature Microphones Type 4060, 4061, 4062 and Adjustable Miniature Microphone Headband Type 4066 are for acoustical equalization, according to the placement on the body of the performer. When mounted on the head of the performer, the microphone normally needs a 3 dB soft boost at 8-20 kHz, provided by the soft boost grid (position A). Placements on the chest or near the ear of the performer require a 10 dB boost at 12 kHz for the microphone to sound natural (position B). This acoustical equalization is noiseless and is provided by the high boost grid. Type 4065 Miniature Microphone Headband is only supplied with the soft boost grid as the microphone will always be placed near the mouth.

Attention: Avoid excessive force or tampering when removing or mounting the grid, as it may cause damage to the grid and the net in top of the grid may become detached.

Note: The microphone is supplied with the soft boost grid fitted. This grid must be removed before being replaced by the high boost grid.

2.2 Correct use of microphone element

The diaphragm in the microphone element is the most sensitive part of the unit and must be left untouched to preserve its original characteristics.



Attention: Do not spray substances - e.g. hair spray directly into the microphone.

Note: Preferably avoid make-up and paint on the microphone element and housing, as it may be difficult to remove later without risking particles attaching to the diaphragm.

Tip: In lapel or tie placement it is recommended that the microphone element and grid

point away from the mouth to decrease wind noises caused by the mouth or nose of the performer. The microphone element is completely omnidirectional for all frequencies, so this method will not colorize the sound.

Tip: The protection grids are available in three standard colours: Black, beige and white. Check if a different coloured protection grid will be less visible before painting or colouring a microphone grid.



2.3 Correct use of microphone cable

The cable is usually longer than required for its actual purpose. Ensure that superfluous cable is wound up in soft loops (preferably 6-8 cm in diameter). Avoid 'kinks' on the cable.

Attention: Exposing the cable to stretching beyond its specifications or stressing it by winding it tightly over sharp edges will reduce the microphone's operational life.

Tip: Handling noise from the cable can be decreased by up to 30dB by making a loose knot (diameter 3-4cm) on the cable as close to the microphone element as possible.

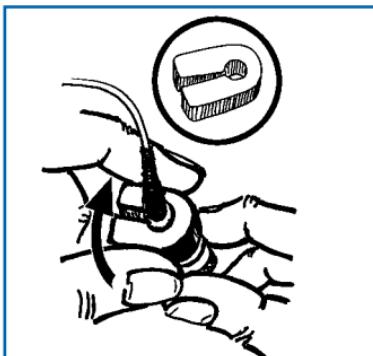
Tip: The part where the cable enters the MicroDot connector will sometimes be exposed to excessive stress and after long term heavy-duty use the cable might show signs of wear at this point. As a preventive maintenance procedure it may be advisable to replace the connector in this instance. Contact the nearest DPA Microphones representative for maintenance advice or assistance.



Correct way to wind up the cable of the Miniature Microphone. Please note the slack after the connector.

2.4 Correct use of the adapters and the MicroDot connectors

To provide our professional users the possibility for a safe and compact mounting of connectors, all Miniature Microphones from DPA Microphones are fitted with the MicroDot connector as standard. A broad range of connection adapters are then offered as optional accessories for most VHF and UHF systems for professional use. The adapters are ultra-compact and will in most cases take up no more space than the original connectors.



With each adapter comes a connector-tightening tool, which should be employed whenever the MicroDot connector needs to be tightened safely onto the adapter for long periods of time.

Attention: Do not attempt to mount any other connector onto the cable than the standard MicroDot connector from DPA Microphones. The DPA MicroDot connector is specially designed for use with the Kevlar reinforced cable, ensuring the maximum possible tensile strength in the design. In case of failures, MicroDot spare parts, assembly tool and assembly guide can be acquired from DPA Microphones.

Attention: Various wireless systems require use of electronic components inside the adapter to optimise the signal level, the DC-offset filtering and powering of the build-in microphone preamplifier. Using the adapters from DPA Microphones ensures the correct electronic circuit with the listed types of wireless systems at all times. No attempt to employ non-standard adapters or connectors should be made as damage might be done to the microphone preamplifier.

Attention: Do not use non-standard MicroDot male connectors on the adapters as the female part on the adapter might be damaged.

Attention: Never attempt to loosen or tighten the connector by the cable or its strain relief! Despite the use of Kevlar, the cable might be damaged if twisted with excessive force.

Attention: Tighten the MicroDot using finger torque or the recommended tightening tool only. Never attempt to use glue.

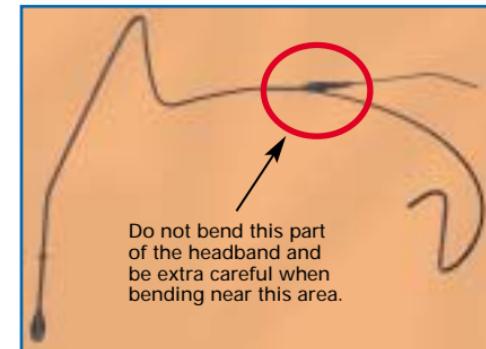
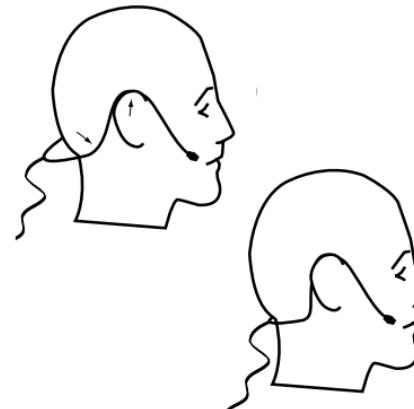


3 Miniature Microphone Headbands

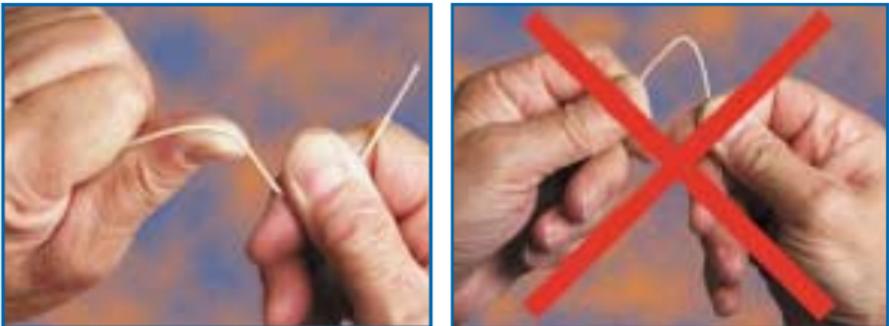
3.1 Adjusting the Type 4065 Headband

The Miniature Headband Type 4065 is pre-bent for your convenience. However, it needs minor adjustments in order to get a tight fixed position to the back of the neck.

Carefully bend the steel tube at the areas shown on the illustration (to the left) in order to get a tight fixed position to the back of the neck.



When bending the steel tube please treat with care. The steel tube must be bent around a round object (min. diameter of 20mm) or a thumb as shown on the illustration in order not to break the headband.

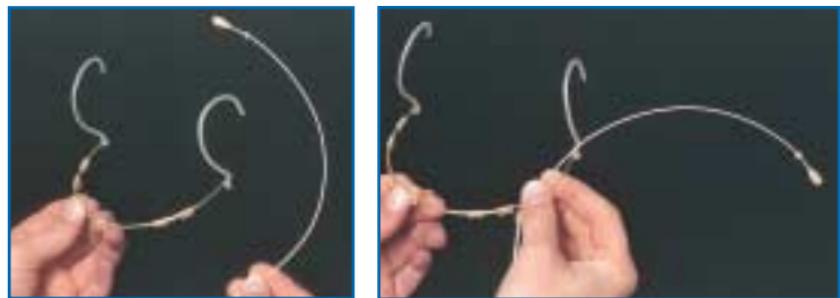


Attention: Do not make a sharp bend in the stainless steel tube, as this might break it or make further adjustments impossible.

Attention: Do not bend the steel tube near the microphone element, as you risk breaking the microphone element from the steel tube. The microphone element is perfectly omnidirectional and does not need to point directly towards the mouth of the performer. Avoid positioning the microphone in the air stream from nose or mouth.

3.2 Adjusting the Type 4066 Headband

The Type 4066 Adjustable Miniature Microphone Headband is supplied with the boom mounted. To change sides simply click the boom out of the clips and follow the instructions below.



- Hold the boom in your right hand when mounting on the right side and vice versa. Hold the boom by the cable relief.
- Position your hand with the boom between the earhooks and turn the boom around in the loop. Take your hand with the boom under the headband and draw it towards you.
- Now secure the microphone boom into the two clips next to the earhook beneath which the boom is to be mounted. Next, secure the boom in the clip in the middle of the headband. This clip is movable and should be placed near the end of the microphone boom, before the cable relief (where the soft cable begins to be visible). The remaining two clips are not used (unless two booms are to be mounted on the same headband.) The soft cable should not be attached into the clips.

Adjust the approximate position that the microphone boom should be placed on the cheek between the ear and the mouth. Hold the headband when pushing or pulling the microphone boom. (Please note that when placed near the ear, the high boost grid should be used in order to compensate for the high frequency loss in this position.)

Note: The capsule features an omnidirectional transducer and it is therefore not necessary to pull the capsule to the front of the mouth. It can be placed very discreetly on the cheek and still produce a highly detailed and clean sound by using the specially designed DPA grids. Please see page 7.

Now take up the 4066 and adjust the size of the headband so that it fits the size of your head: Start with an oversized headband and use both hands simultaneously, holding your index fingers on the back of the headband while pushing in the earhook parts inwards with your thumbs. If you want the position of the microphone boom to be altered at this point, adjustments are still possible, simply by drawing the boom while holding a firm grip with the other hand on the headband.



Note: If the headband's standard bend should be too tight, it may be changed for convenience by carefully expanding the distance between the earhooks. The size as supplied on delivery is more suitable for smaller heads but may be easily expanded at will.

For the sake of invisibility, you can now choose to bend the microphone boom slightly so that the capsule is as close to the cheek as possible. This will minimise the risk of shadows on the face, when used in applications where heavy spots are common. Do not bend by holding on the capsule itself, but bend the wire boom, making a smooth curve with your thumb to best fit the profile of the face.

Note: When researching the effect of changes in frequency response of this microphone, tests were done with the microphone placed directly on the cheek as well as in a short distance away. No appreciable difference in sound quality is present between the two positions.

3.3 Using MMB4066 separately

Tip: It is possible to use the MMB4066 Miniature Microphone Boom separately, in applications where the headband is not needed. No electronic components are incorporated in the headband, which serves purely as a mount to the boom.

In applications where the miniature microphone needs to be invisible e.g. when mounted in hair or wigs, it can be useful to have a hard steel tube instead of a soft cable running over the head. Also, when mounted on specific instruments, it can prove necessary to have the microphone lifted from the base. This is possible when using the MMB4066 Miniature Microphone Boom, because the microphone element is attached to a hard steel tube.

4 Service & Repair

Products from DPA Microphones are extremely stable, and there should not be any significant change in the specifications with time and use. If, however, you are not totally satisfied with the characteristics exhibited by these products, then contact your nearest DPA Microphones representative for further details of service and the repair facilities that are available. DPA Microphones has a maximum seven working days in-house service policy, usually ensuring that no more than seven working days will elapse from the day the item for service is received and accepted to the day we are ready to return it to you. Your satisfaction is our satisfaction.

Please contact DPA Microphones for your nearest representative on tel. +45 48 14 28 28 or fax +45 48 14 27 00. You can also get in touch with DPA Microphones via the internet using e-mail info@dpamicrophones.com or visit our website at www.dpamicrophones.com.

5 Accessories Available

Miniature Holders

DMM0001	Miniature Clip
DMM0002-B	Miniature Double Pin, Black
DMM0002-W	Miniature Double Pin, White
DMM0003-B	Miniature Magnet, Black
DMM0003-W	Miniature Magnet, White
DMM0004	Miniature Clip, Small
DMM0005	Miniature holder, Single Pin, 3pcs.
DMM0007	Universal surface mount
MHS6001	Microphone Holder for Strings, 1 pcs.
MHS6005	Microphone Holder for Strings, 5 pcs.

Acoustic Modification Accessories

DUA6001	Miniature Grids, 5pcs, Soft Boost, Black
DUA6002	Miniature Grids, 5pcs, High Boost, Black
DUA6003	Miniature Grids, 5pcs, Soft Boost, Beige
DUA6004	Miniature Grids, 5pcs, High Boost, Beige
DUA6005	Miniature Grids, 5pcs, Soft Boost, White
DUA6006	Miniature Grids, 5pcs, High Boost, White

Windscreens

DUA0560	Miniature Windscreens, 5pcs, Black
DUA0561	Miniature Windscreens, 5pcs, Red
DUA0562	Miniature Windscreens, 5pcs, Blue
DUA0563	Miniature Windscreens, 5pcs, Yellow
DUA0564	Miniature Windscreens, 5pcs, Green
DUA0566	Miniature Windscreens, 5pcs, White
DUA0567	Miniature Windscreens, 5pcs, Beige
DUA0570	Miniature Windscreens, 7pcs, Color Mix

Connection Adapters

DAD6001	Adapter: MicroDot to 3-pin XLR (P48)
DAD6001-BC	Adapter: MicroDot to 3-pin XLR (P48) w. Belt Clip
DAD6002	Adapter: Sennheiser BF1083-U/BF1053-U
DAD6003	Adapter: Sennheiser SK 50/SK 250/SK3063
DAD6004	Adapter: Audio Ltd. Tx 2000/Tx 2020
DAD6006	Adapter: Beyerdynamic TS42/TS85/TS190/TS900
DAD6007	Adapter: AKG PT 300

5 Accessories Available continued

DAD6008	Adapter: Sony WRT820/WRT860
DAD6009	Adapter: Samson CT-2/TX-3/UT4/UT5/UT6
DAD6010	Adapter: Shure U1/UT1, TOA WM4300
DAD6011	Adapter: Vega T-66/T-677 & Shure U1L
DAD6012	Adapter: Lectrosonic M185
DAD6013	Adapter: Micron TX501.x/TX502.x
DAD6014	Adapter: Pastega TMA16/TMU20 (2 wire preset)
DAD6015	Adapter: Vega T-37
DAD6016	Adapter: Beyerdynamic (TS600)/Trantec
DAD6017	Adapter: AKG PT 60/PT 80/PT 81
DAD6018	Adapter: Pastega TMA16/TMU20 (3 wire preset)
DAD6019	Adapter: Sony Freedom WRT 805, Sennheiser Evolution/SK-300

DAD6020	Adapter: Prostar/Telex UHF-UB12
DAD6021	Adapter: Lectrosonic UHF systems for low level recordings
DAD6022	Adapter: Audio-Technica 1900 Series

Miniature Power Supplies

MPS6010	Miniature Battery Supply, 2-channel, 3-pin XLR
MPS6020	Miniature Battery Supply, 2-channel, Phono
MPS6030	Miniature Battery Supply, 2-channel, Mini-Jack
MPS6040	Miniature Battery Supply, 2-channel, 1/4 in. Jack

Cables

DA06005	Miniature Microphone Cable, 3.5m
DA06010	Miniature Microphone Cable, 10m
DA06020	Miniature Microphone Cable, 20m

Parts for 4066 headband

AHM6000	Adjustable Headband Mount
MMB4066-B	Miniature Microphone Boom, Black
MMB4066-F	Miniature Microphone Boom, Beige

Cases & Boxes

DAK4060	Accessory Kit for Miniature Microphones
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Miscellaneous

DUA6010	Drop Stopper, White, 10pcs.
DUA6011	Drop Stopper, Black, 10pcs.
DQA0035	Tool for MicroDot
DUA6015	Clips for AHM6000, 5pcs.

6 Specifications

Cartridge type: Pre-polarized condenser element with vertical diaphragm

Principle of operation: Pressure

Power Supply: Via the Adapter System from DPA Microphones

Frequency response:

Short grid: 20Hz-20kHz \pm 2dB,
3dB soft boost at 8-20 kHz

Long grid: 20Hz-20kHz \pm 2dB,
10dB boost at 12 kHz

Directional characteristics: Omnidirectional

Sensitivity:

4060: Nominally 20mV/Pa \pm 3dB at 1kHz

4061: Nominally 6 mV/Pa \pm 3dB at 1kHz

4062: Nominally 1 mV/Pa \pm 3dB at 1kHz

4065: Nominally 6 mV/Pa \pm 3dB at 1kHz

4066: Nominally 6 mV/Pa \pm 3dB at 1kHz

Equivalent noise level A-weighted:

4060: Typ. 23dB(A) re. 20 μ Pa (max. 26dB(A))

4061: Typ. 26dB(A) re. 20 μ Pa (max. 28dB(A))

4062: Typ. 33dB(A) re. 20 μ Pa (max. 37dB(A))

4065: Typ. 26dB(A) re. 20 μ Pa (max. 28dB(A))

4066: Typ. 26dB(A) re. 20 μ Pa (max. 28dB(A))

Equivalent noise level CCIR 468-1:

4060: Typ. 35dB (max. 38dB)

4061: Typ. 38dB (max. 40dB)

4062: Typ. 45dB (max. 49dB)

4065: Typ. 38dB (max. 40dB)

4066: Typ. 38dB (max. 40dB)]

Max SPL:

4060: 134dB SPL before clipping

4061: 144dB SPL before clipping

4062: 154dB SPL before clipping

4065: 144dB SPL before clipping

4066: 144dB SPL before clipping

Total Harmonic Distortion: 123dB SPL peak (<1% THD); 120dB SPL sine (<1% THD)

Preamplifier:

Output impedance: 30-40 Ohm

Cable drive capability: <300m

Dimensions:

Microphone length: 12.7mm

Microphone diameter: 5.4mm

Capsule diameter: 5.4mm

Weight:

4060, 4061 & 4062: 7.5g incl. cable and MicroDot connector

4065 & 4066: 14g incl. cable and MicroDot connector

Finish:

4060 & 4061: Black, beige or white

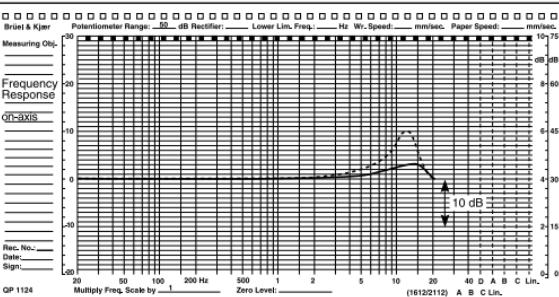
4062 & 4065 & 4066: Black or beige

7 Frequency responses

On-axis frequency response

of Miniature Microphones.

Please notice that Type 4065 only utilizes the low boost frequency response.



A Soft boost grid

B High boost grid



8 Warranty

All products from DPA Microphones are covered by a one-year limited warranty on both mechanical functionality and documented specifications as long as the items are not mistreated, abused or modified in any way. In case of a warranty claim your invoice is your warranty registration.

9 CE Standard

The CE-mark guarantees all products conform with relevant standards approved by the European Community. The products described in this User's Manual comply with current relevant standards when used with cables from DPA Microphones.

EMC Directive: 89/336/EEC, amended by 92/31/EEC and 93/68/EEC Low Voltage Directive: 73/23/EEC, amended by 93/68/EE